

Date: 6/23/2006 8:54AM
User: Linda Lacelle

PROCESS SHEET

Customer	CU-DAR001 Dart Helicopters Services	Drawing Name	FWD TUBE ASSEMBLY
Job No.	27677	Part No.	D3391021
Estimate No.	10467	Drawing No.	D3391 REV E
P.O. No.	N/A	Drawing Rev.	E
First Issue	1/1	Project No.	N/A
Prsht Rev.	NC	Material	N/A
This Issue	6/23/2006	Due Date	7/30/2006
Prev. Run	27676	QTY:	1
Type : MACHINED PARTS			

Written by:

Checked & Approved by:

Comment :

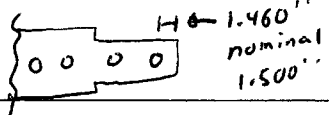
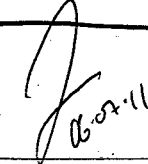
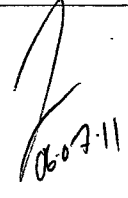
Est. A 05.09.13 New issue KJ/JLM
Est. B 06.02.10 Dwg rev.D ecn 773 EC
Est. C 06.05.02 Added inspections EC

Job Number:



Seq. No.	Machine or Operation	Description
1.0	D6013047	SKIDTUBE MAT'L
<p>Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s) SKIDTUBE MAT'L Pick: Qty Part Number Description Batch 1 D6013-047 Extrusion</p> <p><i>323935 DP06-6-23</i> ①</p>		
2.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
<p>Comment: LANDING GEAR RESOURCE 1 Cut extrusion to 46.52 +0.010 -0.020</p> <p><i>ML 06/06/03</i> ①</p>		
3.0	BENDING	BENDING MACHINE
<p>Comment: Nc bender Bend as per Dwg D3391 Using Bend Prog 3391021</p> <p><i>DP06-6-23</i> ①</p>		
4.0	QC5	INSPECT WORK TO CURRENT STEP
<p>Comment: INSPECT WORK TO CURRENT STEP</p> <p><i>Pm 06-06-23</i></p>		
5.0	HAAS1	HAAS CNC VERTICAL MACHINING #1
<p>Comment: HAAS CNC VERTICAL MACHINING #1 1-Machine as per Folio FA590 Rev. <i>D</i> & Dwg D3391 Rev. <i>E</i> Identify as D3391-1 2-Deburr</p> <p><i>PTO</i> *</p> <p><i>ML/JF 06/07/11</i> ①</p>		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			
06.07.11	5	EDGE DISTANCE TO 1 st saddle hole is 1.460" 	PH 06.07.11 AS PER QSI 042	SEE attached e-mail. OKAY per QSI 042	AH 06.07.11 ml 05.02.11		AS PER QSI 042	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes ☐ No ☒ DQA: ☒ Date: 07/02/07

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Job Number:



Seq. No.	Machine or Operation	Description
6.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
		ml/J.F. 06/07/11 ①
	Comment: INSPECT PARTS AS THEY COME OFF MACHINE	
7.0	QC8	SECOND CHECK
	Comment: SECOND CHECK	SD 06.06.11 ①
8.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
	Comment: LANDING GEAR RESOURCE 1	
	1-Drill and c'sink float bag holes as per Dwg D3391 using DT8798(Do not open tow cap holes to finish size) (ONLY DRILL HOLES MARKED "A")	} pmc 06-08-29 ①
	2-Drill Remaining two holes for tow cap using DT 8819 Locating off of .1875" holes drilled in previous step	
	3-Open tow cap holes to .208" as per Dwg D3391	
	4-Open Tow Ring hole to .640" as per Dwg D3391	
	5-Drill wearplate holes as per Dwg D3391 Using Dt8217 & DT8878	
	6-Debur	pmc 06-08-29 ①
9.0	QC5	INSPECT WORK TO CURRENT STEP
		DP 6-8-30 ①
	Comment: INSPECT WORK TO CURRENT STEP	
10.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
	Comment: HAND FINISHING RESOURCE #1 Acid etch and Alodine as per QSI 005 4.1	m.b 06/10/14 ①
11.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION
	Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION	yl 07/02/21 ①
12.0	POWDER COATING	POWDER COATING
	Comment: POWDER COATING Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3	a.m 07/02/24 ①
13.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION
	Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION	SAD 07/02/24 ①
14.0	NAS1330C3KB166	INSERT

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Job Number:



Seq. No.	Machine or Operation	Description
	Comment: Qty.: 14.0000 Each(s)/Unit Total: 14.0000 Each(s) Rivnut Pick: Qty Part Number Description Batch 14 NAS1330C3KB166 Insert	B 100732 a.m 07/02/24 ①
15.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
		m.h/a.m 07/02/24
	Comment: HAND FINISHING RESOURCE #1 Install Inserts as per Dwg	a.m 07/02/24 ①
16.0	QC5	INSPECT WORK TO CURRENT STEP
		20702-26 ①
	Comment: INSPECT WORK TO CURRENT STEP	20702-26 ①
17.0	D3401041	Tow Cap Assembly
	Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s) Tow Cap Assembly Pick: Qty Part Number Description Batch 1 D3401-041 Tow Cap	229214 m.h/a.m 07/02/24 ①
18.0	AN3C4A	BOLT
	Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) Bolt Pick: Qty Part Number Description Batch 4 AN3C4A Bolt	m101390 m.h/a.m 07/02/24 ①
19.0	NAS1515H3L	WASHER
	Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) Washer Pick: Qty Part Number Description Batch 4 NAS1515H3L Washer	m103481 m.h/a.m 07/02/24 ①
20.0	AN960C10L	washer
	Comment: Qty.: 4.0000 Each(s)/Unit Total: 4.0000 Each(s) washer	m103344 m.h/a.m 07/02/24 ①
21.0	HAND FINISHING1	HAND FINISHING RESOURCE #1
	Comment: SMALL & MEDIUM FAB RESOURCE 1 Install tow Cap as per Dwg D3391 Identify as D3391-021	m.h/a.m 07/02/24 ①
22.0	QC5	INSPECT WORK TO CURRENT STEP
		20702-26 ①
	Comment: INSPECT WORK TO CURRENT STEP Inspect thread of each insert using DT8821	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

Job Number:



Seq. No.	Machine or Operation	Description
23.0	PACKAGING 1	PACKAGING RESOURCE #1
	Comment: PACKAGING RESOURCE #1 Identify and Stock Location: <i>303604</i>	
24.0	DC	DOCUMENT CONTROL
	Comment: DOCUMENT CONTROL Inspection Level 21 <i>07/02/27</i> ①	

Job Completion



U 570226

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Mfg / Design Mgr	Approval QC Inspector

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Design Mgr	Approval QC Inspector
			Initial Design Mgr	Action Description Design Mgr	Sign & Date			

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

NOTE: Date & initial all entries

QA: N/C Closed: _____ Date: _____

DART AEROSPACE LTD		Work Order:	
Description: Float Skidtube (412)		Part Number:	D3391-1
Inspection Dwg: D3391	Rev: E	Page 1 of 1	

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.687	+0.010/-0.000	0.693"				
3.590	+0.025/-0.010	3.610"				
3.300	+0.040/-0.000	3.324"				
1.429	+0.040/-0.060	1.437"				
4.250	+/-0.010	4.204"				see attach email
4.250	+/-0.010	4.255"				
1.500	+/-0.010	1.456"				see attach email
1.750	+/-0.010	1.746"				
5.250	+/-0.010	5.248"				
7.000	+/-0.010	6.998"				
Ø0.484	+0.006/-0.001	Ø0.485"				

Measured by: J.F.	Audited by: SD	Prototype Approval:	N/A
Date: 06/07/11	Date: 06.07.11	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	06.04.27	New Issue P/O D3391-011/-021	KJ/JLM	
B	06.06.19	Tolerances revised per D3391 Rev. E	KJ/JLM	

Peter Hum

From: David Shepherd [dshepherd@dartaero.com]

Sent: July 10, 2006 6:24 PM

To: 'Peter Hum'

Subject: RE: D3391-1 out of tolerance

Peter,

I agree with you that there will be increased bending stress in the mid tube. However, I think there will be very little difference in the magnitude of this stress because of the 0.040" difference in length. My gut feel is that we should accept this part as a deviation.

Of course, you are always welcome to scrap it, but I don't think that it is necessary.

David

From: Peter Hum [mailto:phum@dartaero.com]

Sent: Monday, July 10, 2006 2:53 PM

To: 'David Shepherd'

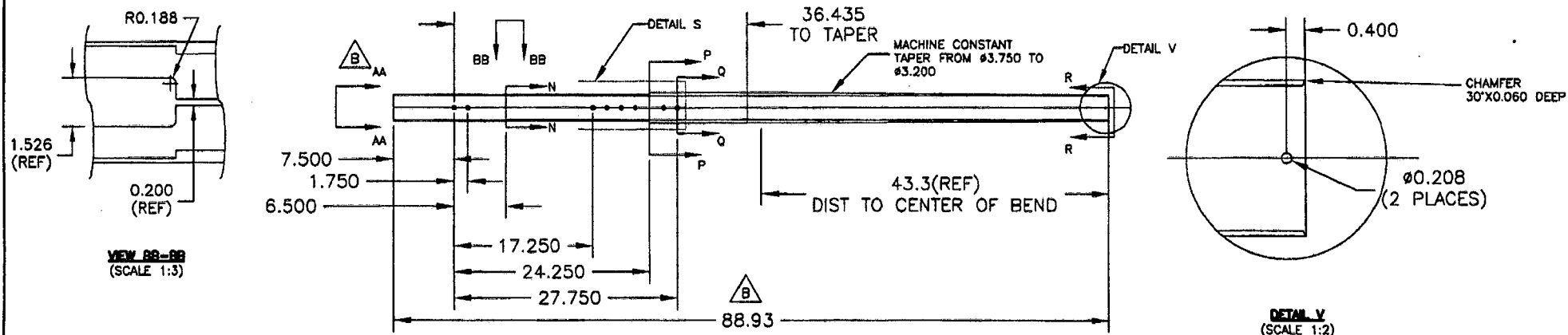
Subject: D3391-1 out of tolerance

David,

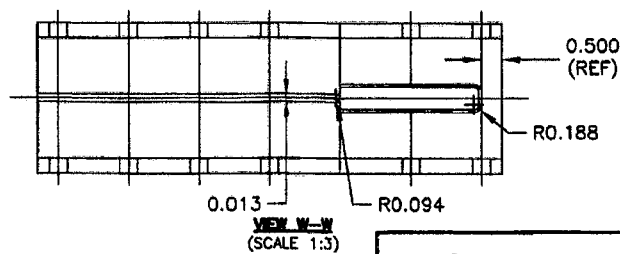
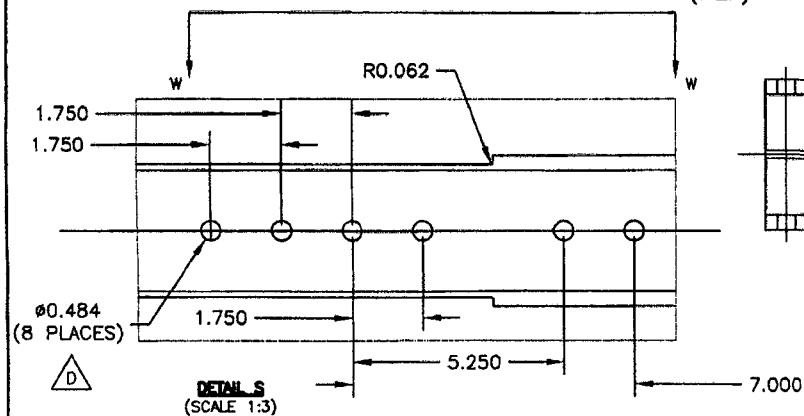
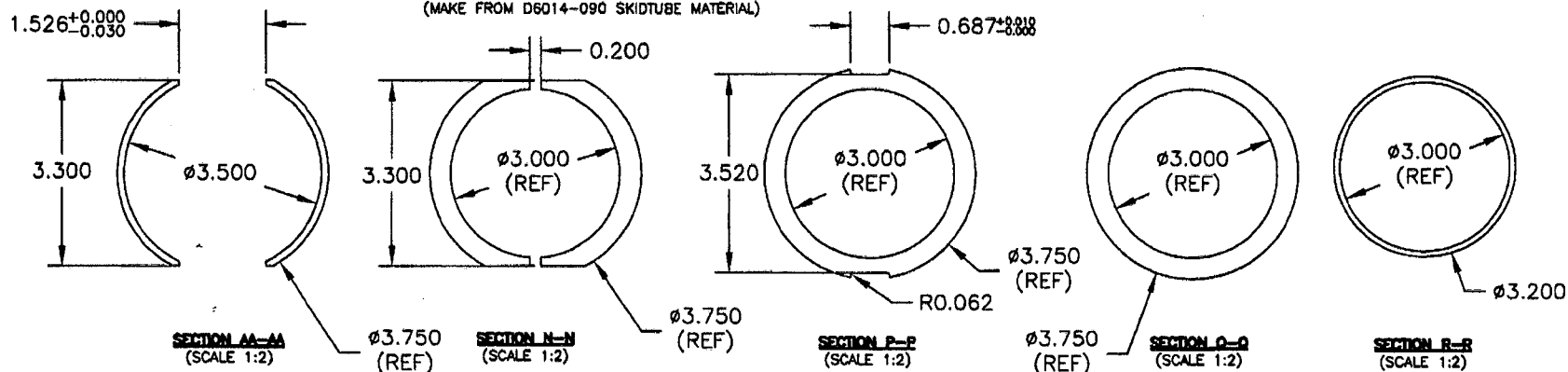
I've attached a picture showing the dimension 1.500" being out of tolerance. The measured dimension is 1.460". Therefore, the piece is 0.040" below nominal dimension

I think this part may become scrap because more bending moment will be introduced to the mid tube (D2500-1/-3) section. Previous testing has shown that a shorter tube will fail quicker than a longer tube.

Peter <<...>>



D3391-3 AFT DRILLING AND CUTTING DETAIL
(MAKE FROM D6014-090 SKIDTUBE MATERIAL)



REFERENCE ONLY

RELEASED

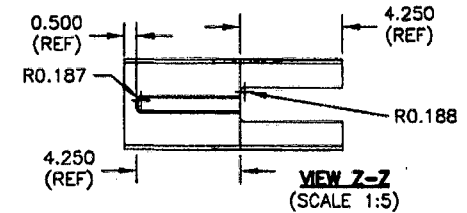
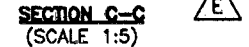
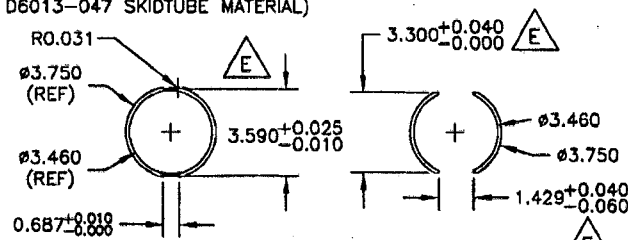
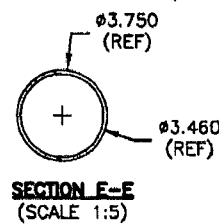
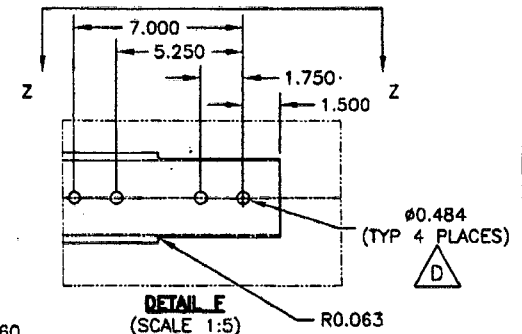
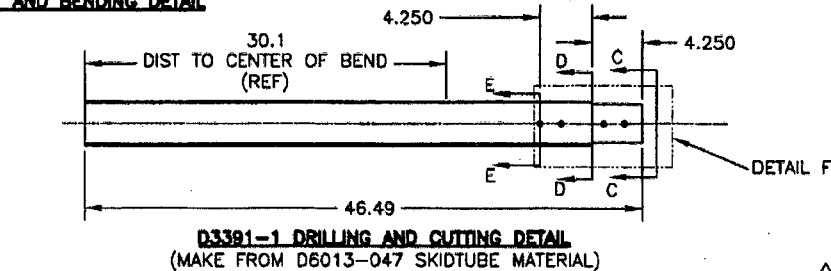
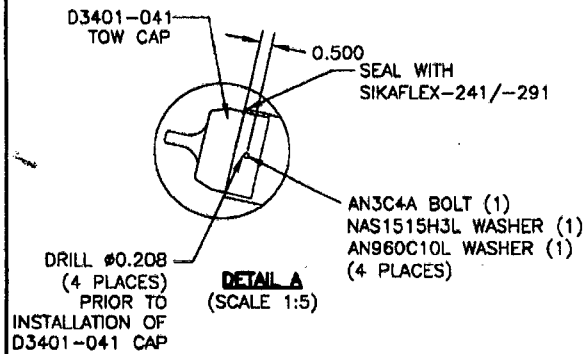
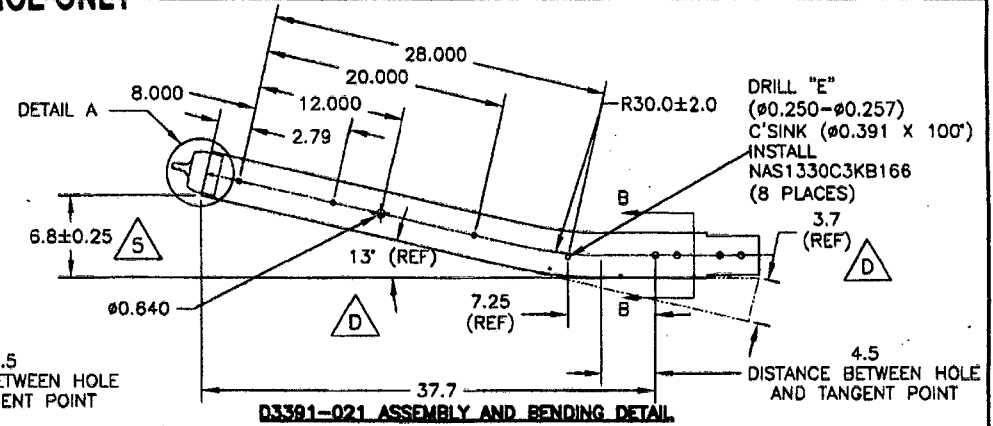
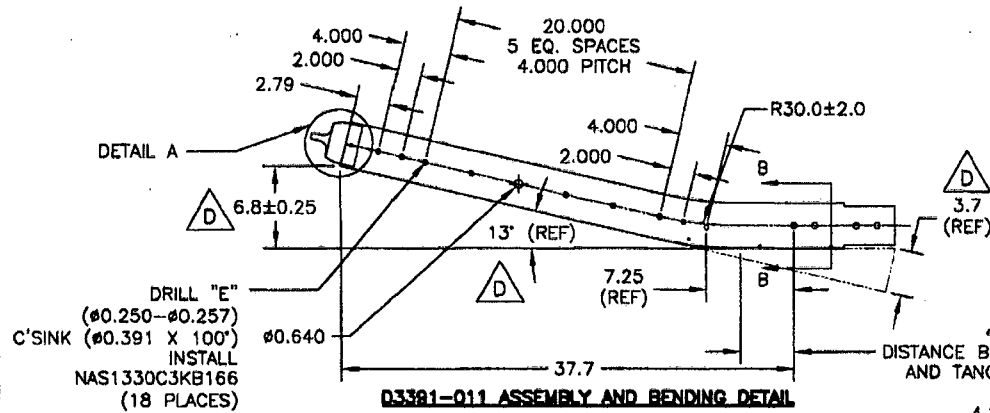
06.05.03

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DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE USA, INC.
CHECKED	PH	APPROVED	PH	DRAWING NO.	REV. E
DATE	06.04.25	TITLE	412 FLOAT SKIDTUBE	D3391	SHEET 4 OF 5
					SCALE
					1:12

REFERENCE ONLY



D3391-011/-021 FWD TUBE ASSEMBLY PARTS LIST

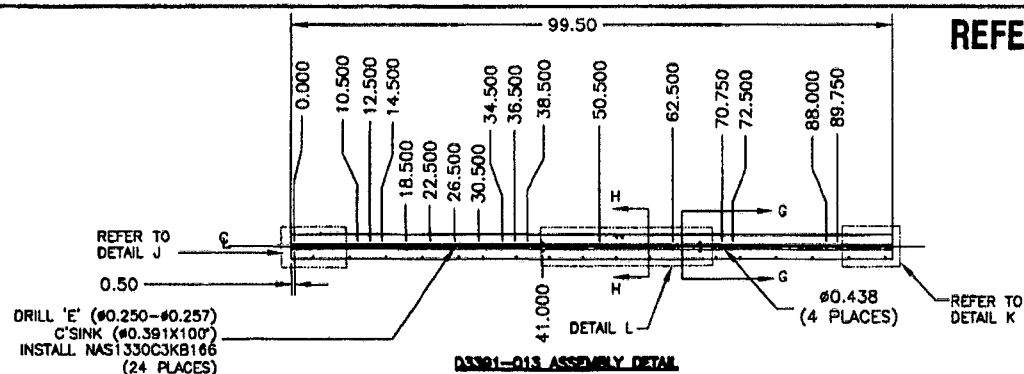
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X	X	D3391-011	FWD TUBE ASSEMBLY
	X	D3391-021	FWD TUBE ASSEMBLY
1	1	D8C13-047	FWD TUBE
1	1	D3401-041	TOW CAP
4	4	AN3C4A	BOLT
4	4	NAS1515H3L	WASHER
4	4	AN960C10L	WASHER
24	14	NAS1330C3KB166	INSERT

DRILL "E"
(Ø0.250-Ø0.257)
C'SINK (Ø0.391 X 100")
INSTALL
NAS1330C3KB166
(6 PLACES)

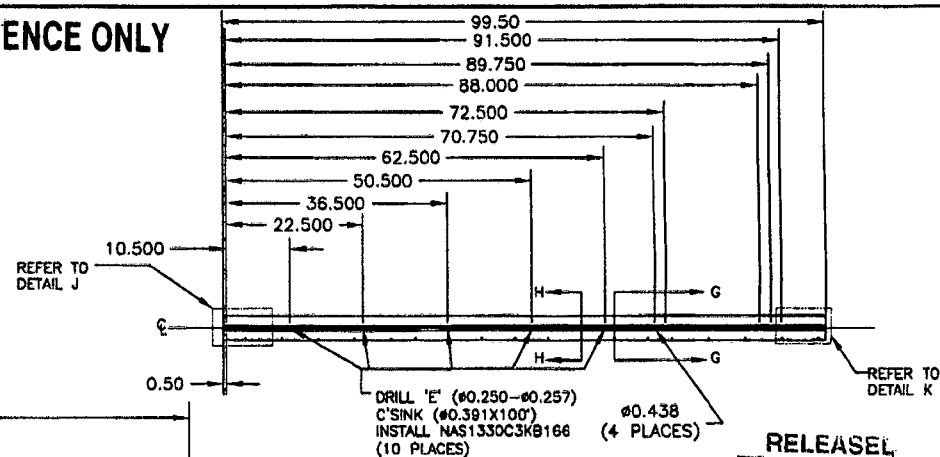
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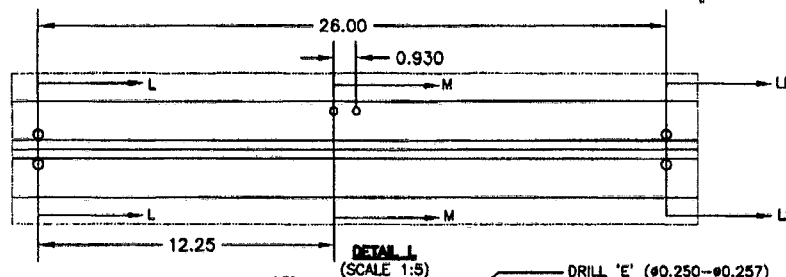
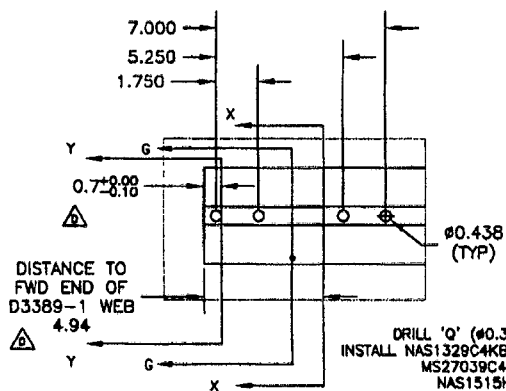
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CHECKED #	APPROVED #	DRAWING NO. D3391	REV. E
DATE 06.04.25	TITLE 412 FLOAT SKIDTUBE	SHEET 2 OF 5	SCALE 1:10



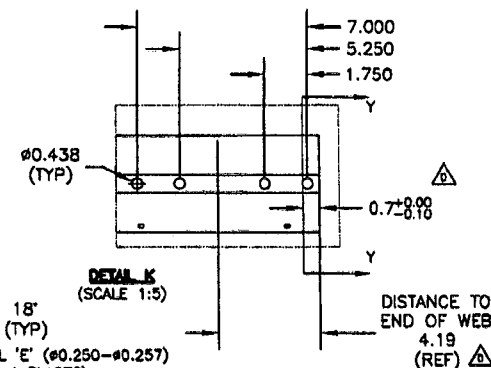
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RELEASE



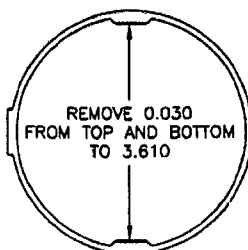
D3391-023 ASSEMBLY DETAIL



D3391-013/-023 MID TUBE ASSEMBLY PARTS LIST

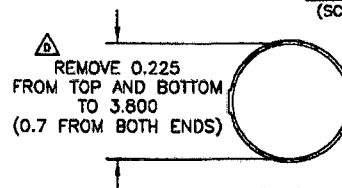
QTY - 013	QTY - 023	PART NUMBER	DESCRIPTION
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	X	D3391-023	MID TUBE ASSEMBLY
1	1	D2500-1-100	EXTRUSION
1	1	D3389-1	WEB
24	20	NAS1330C3KB116	INSERT
24	10	NAS1330C3KB166	INSERT
4		NAS1329C4KB140	INSERT
4		NAS1515H3L	WASHER
4		AN960C10L	WASHER
4		NAS1515H4L	WASHER
4		AN960C416L	WASHER
4		MS27039C1-09	SCREW
4		MS27039C4-08	SCREW

SECTION L-L (SCALE 1:4)

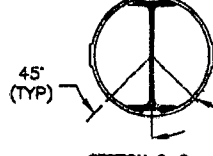


SECTION X-X (SCALE 1:2)

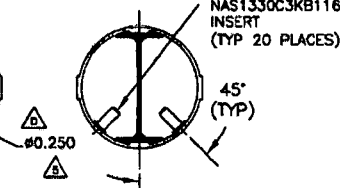
SECTION M-M (SCALE 1:4)



SECTION U-U (SCALE 1:4)



SECTION Q-Q (SCALE 1:4)

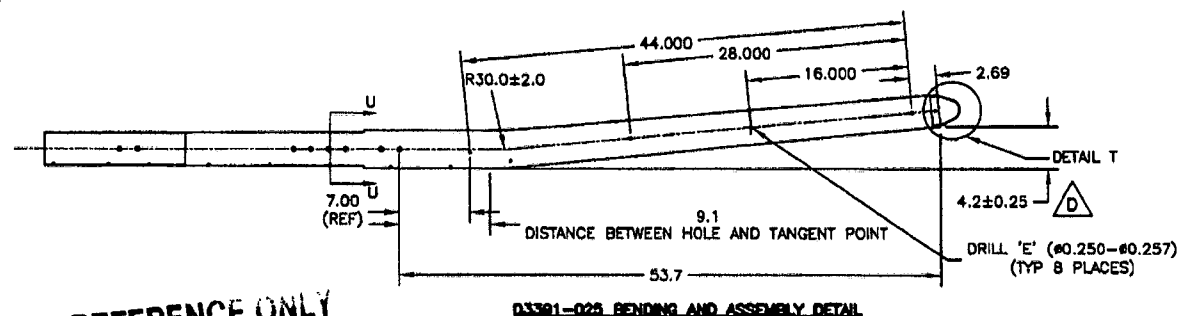
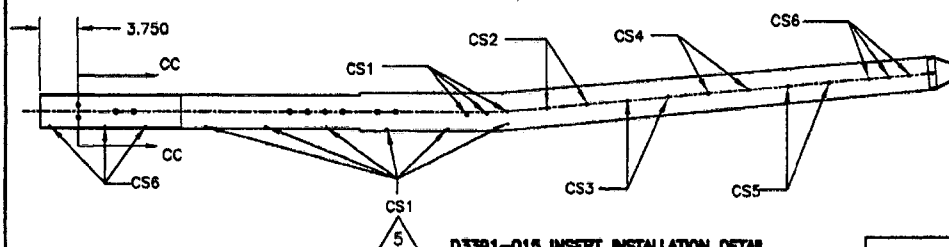
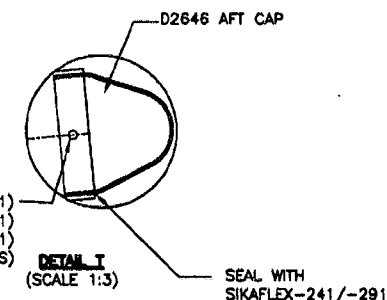
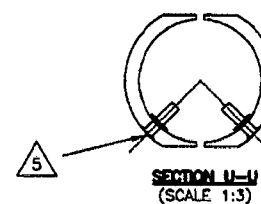
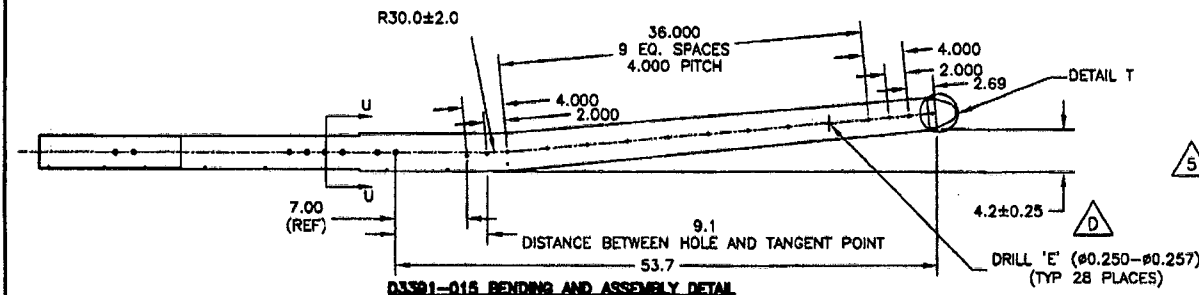


SECTION H-H (SCALE 1:4)

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DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE USA, INC.	REV. E
CHECKED	#	APPROVED	#	DRAWING NO.	D3391	SHEET 3 OF 3
DATE	06.04.25	TITLE	412 FLOAT SKIDTUBE	SCALE	1:20	



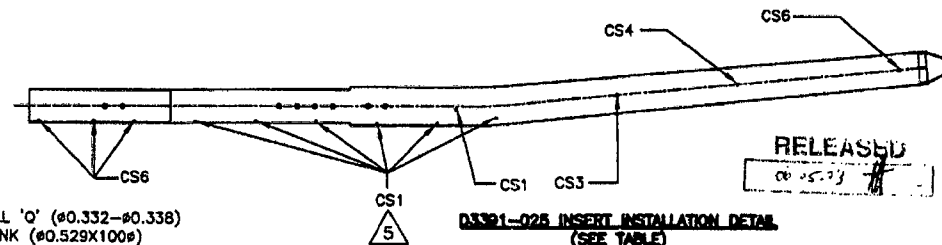
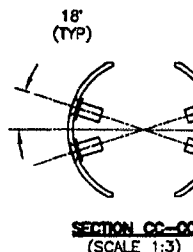
REFERENCE ONLY

C'SINK AND INSTALL AESS10KBXXX AND/OR NAS1330C3KBXXX IN HOLES MARKED CS1-CS6 AS FOLLOWS

HC ES MARKED	QTY D3391-015	QTY D3391-025	C'SINK	PIN
CS1	18	14	Ø0.425	AESS10KB396
CS2	2	2	Ø0.397	AESS10KB396
CS3	2	2	Ø0.397	NAS1330C3KB316
CS4	2	2	Ø0.397	NAS1330C3KB266
CS5	2	2	Ø0.397	NAS1330C3KB216
CS6	12	8	Ø0.257	NAS1330C3KB166

D3391-015/-025 AFT TUBE ASSEMBLY PARTS LIST

QTY - 015	QTY - 025	PART NUMBER	DESCRIPTION
X		D3391-015	AFT TUBE ASSEMBLY
	X	D3391-025	AFT TUBE ASSEMBLY
1	1	D6014-090	AFT TUBE
1	1	D2646	AFT CAP
18	14	AESS10KB396	INSERT
4	2	NAS1330C3KB316	INSERT
4	2	NAS1330C3KB266	INSERT
4	2	NAS1330C3KB216	INSERT
12	8	NAS1330C3KB166	INSERT
4	2	NAS1330C4KB151	INSERT
2	2	AN3C4A	BOLT
2	2	NAS1515H3L	WASHER
2	2	AN960C10L	WASHER



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DESIGN	PH	DRAWN BY	PH	DART DART AEROSPACE USA, INC. PORT HADLOCK, MA
CHECKED		APPROVED		DRAWING NO. D3391
DATE	06.04.25	TITLE	412 FLOAT SKIDTUBE	REV. E SHEET 5 OF 5 SCALE 1:12

RELEASED
06-05-23

Jason Murdoch

From: Bill Beckett [bbeckett@dartaero.com]
Sent: Monday, February 05, 2007 1:10 PM
To: 'Jason Murdoch'
Cc: 'L Lacelle'
Subject: RE: sikaflex-291

Jason,
Yes.
Bill

From: Jason Murdoch [mailto:jmurdoch@dartaero.com]
Sent: February 5, 2007 12:49 PM
To: 'Bill Beckett'
Subject: sikaflex-291

Bill,
We have 25 tubes of sikaflex-291, batch M102672, that expires at 02/2007. Is it acceptable to use the remainder until the end of this month?

jmurdoch@dartaero.com
Q.C. COORDINATOR